U.S. Environmental Protection Agency
Total Coliform Rule / Distribution System
Advisory Committee Meeting

December 5-6, 2007

Location:
RESOLVE, Inc.
1255 23rd Street, NW, Suite 275
Washington, D.C. 20037

Meeting Summary

Meeting Objectives/Desired Outcomes:

- *Review coverage of TCR objectives in other rules and share perspectives about possible implications for the TCR. Learn more about the different circumstances and purposes for doing sanitary surveys.*
- *Review a synopsis of the incidence of coliform positive samples during outbreaks. Understand the incidence of EC+ given TC+ from the six-year review data. Learn about the incidence of TC and EC positives in repeat samples (those taken in response to an initial sample being TC positive).*
- *Learn about possible sources of error in analytical and sampling methods.*
- *Learn about actions taken in response to total coliform positive samples and how decisions are currently being made about what follow up actions to take.*
- *Explore ideas for possible improvements to the TCR.*
- *Provide additional direction to technical work group on potential information and analyses to support the advisory committee.*

I. Welcome, Introductions, Meeting Objectives and Agenda

Jini Mohanty, the Designated Federal Officer, opened the meeting and welcomed the meeting attendees and members of the Advisory Committee to this fourth meeting of the Total Coliform Rule / Distribution System Advisory Committee (TCRDSAC).[1]

Gail Bingham, the facilitator from RESOLVE, briefly reviewed the objectives of the meeting, the meeting agenda, and the meeting materials. She noted that the Committee was shifting their deliberations from learning about issues to considering options for improving the Total Coliform Rule (TCR) and improving the knowledge base for understanding distribution systems. She suggested that by the end of the meeting the TCRDSAC might have enough clarity about option themes or packages that it could form task groups to start drafting language that could become part of an agreement in principle. The goal would be for the task groups to present proposed language at the

[1] Please see Attachment A for the Total Coliform Rule/Distribution System Federal Advisory Committee roster. Please see Attachment B for a copy of the meeting agenda. Please see Attachment C for a list of the meeting attendees.

February meeting of the TCRDSAC. Ms. Bingham noted that the facilitators had compiled the options that the Committee members had provided into a matrix that could be a starting point for the Committee's deliberations.[2]

II. September and October Meeting Summaries

The TCRDSAC approved by consensus the revised September meeting summary.[3]

Dr. Sharon Roy, who gave a presentation at the October meeting and participated on the public health panel, clarified language attributed to her in the October meeting summary. A Committee member also provided edits to the meeting summary. The Committee requested that Drs. Eisenberg, Moe, and Cotruvo, who also participated in the October meeting, be given the opportunity to comment on the meeting summary for clarity and accuracy. The TCRDSAC approved the October meeting summary contingent on any changes the public health speakers may request. On December 18, 2007, the draft October meeting summary which included edits from the public health speakers was sent to the TCRDSAC for review of the public health portion of the document (pages 3-8). The TCRDSAC approved the revised October meeting summary.[4]

III. Presentations

Over the course of the two-day meeting, the TCRDSAC heard five presentations, based on information they had requested from the technical workgroup (TWG) in previous meetings. The following is a summary of the discussions related to these presentations.

A. SDWA Framework and TCR Objectives

Doug Owen, Malcolm Pirnie, gave a presentation on the "Total Coliform Rule Within a Safe Drinking Water Context."[5] The goal of the presentation was to provide information on the aspects of the current matrix of SDWA rules that respond to the TCR objectives; the strengths / limitations of how the current rule elements address the rule objectives; and the potential opportunities for improvement / refinement of the rule objectives. In the discussion that followed, the following points were raised:

- In the context of this presentation, "integrity" is defined as the ability of the distribution system, as it transports water from the point of entry to the customer, to be tight and unaffected by external input. Several Committee members noted, however, that definition differs from the one used by the National Academy of Sciences, which includes hydraulic integrity and water quality integrity as well as structural integrity.

[2] A copy of the options matrix is available from the Designated Federal Officer.
[3] Please see Attachment D for a copy of the September TCRDSAC meeting summary.
[4] A copy of the October meeting summary is available from the Designated Federal Officer.
[5] Please see Attachment E for a copy of Mr. Owen's presentation "Total Coliform Rule Within a Safe Drinking Water Context."

- The statement "Disinfectant residual and TC/EC measurements may be too infrequent to capture short-term contamination events" applies to every system category in the presentation.
- The Ground Water Rule (GWR) requires 4-log virus treatment as one of the corrective action options for vulnerable systems, but does not require maintaining a minimum disinfectant residual for any system. Given this, the rating of "fairly well addressed" for the distribution system integrity in disinfected ground water systems is very optimistic.
- Monitoring for disinfectant residual is done for two reasons: the Surface Water Treatment Rule (SWTR) sets a floor for the amount of residual that subpart H (surface water and ground water under the direct influence of surface water) systems must maintain in the distribution system; the Stage 1 Disinfectant and Disinfectant By-Products Rule sets a ceiling (or maximum) for disinfectant residual levels for community water systems (CWS) and non-transient non-community water systems (NTNCWS) that disinfect. Stage 2 DBPR requires consecutive systems that deliver water that has been treated with a disinfectant and are not already conducting residual monitoring to begin.
- Transient non-community water systems (TNCWS) are not required to monitor for disinfectants in the distribution system unless they are subpart H systems (must monitor for and maintain disinfectant residual under SWTR) or they use chlorine dioxide (must monitor for chlorine dioxide and chlorite). Given this, the rating of "fairly well addressed" for the distribution system integrity in disinfected ground water systems may need adjustment downward. This rating also might decrease if integrity issues other than water quality are taken into consideration. However, the TWG as a whole would have to make these judgments.

Regarding the link between TCR and GWR, one Committee member pointed out that from a risk communication standpoint, it sends a confusing message about the significance of monitoring for total coliforms (TC) under GWR if corrective action, other than further monitoring, is not required following a TC positive. Other members countered that requiring further monitoring is a form of action and can prompt systems to look for sources of possible contamination. They also pointed out that contamination could be coming from something other than the source water.

Two members noted that in their states (Minnesota and Utah) and probably most of the other states, premise plumbing is regulated as part of the distribution system for non-community water systems (NCWS). One member expressed concern with including premise plumbing in the distribution systems for NCWS but not for CWS, and suggested this issue be given careful consideration in the Committee's deliberations.

In the discussion, Committee members raised the following questions for further consideration in deliberations about revisions to the TCR:

- Will more frequent monitoring capture more short-term events?
- How should distributions systems be defined?
- How should the differences in how premise plumbing is regulated for NCWS versus CWS be addressed?

B. Analysis of Incidence of TCR Indicators

Vanessa Speight, Malcolm Pirnie, gave a presentation on an "Analysis of Incidence of TCR Indicators."[6] The purpose of the presentation was to summarize findings of studies investigating the incidence of TCR indicators prior to and during reported outbreaks; present data on incidence of positives in repeat samples; present data showing the incidence of EC positives in samples that were TC positive; and discuss additional benefits of TCR sampling. In the discussion afterward, the following points were made:

- The outbreak/indicator analysis is based solely on documented outbreak data reported to the CDC and does not include sub-clinical data.
- Not all monitoring results for all systems are included in the data set. There is room for improvement in data collection and management at both the state and federal level.
- TC positive routine samples are good predictors of TC in repeat samples, but not necessarily good predictors of *E. coli* on a per sample basis. In other words, there appears to be no discernable difference in *E. coli* positives among routine samples that are TC positive as compared to repeat samples that are TC positive.
- From the state perspective, the additional monitoring that is required after a TC positive is valuable even if there is no increased likelihood of finding *E. coli*, because it helps identify vulnerable systems. Systems that have continual violations get placed on the state's noncompliance list, and are looked at by the state and EPA to determine what the problem is and what additional support these systems require.
- The technical work group did not calculate whether taking 5 additional routine samples following a TC positive statistically improves the chances of finding TC.

During the discussion, Committee members raised the following questions:

- Is there a need to get both outbreak and sub-clinical data to help determine whether or not TC is a good indicator of illness?
- How valuable is TC positive as a trigger for additional monitoring, if the additional monitoring is not more likely to find more *E. coli*?
- How does additional routine monitoring increase the probability of finding TC vs. *E. coli*?

C. Analytical and Sampling Methods

Dr. Speight gave a presentation on "Analytical and Sampling Methods."[7] The presentation addressed the data quality concerns related to methods and sampling.

[6] Please see Attachment F for a copy of Dr. Speight's presentation "Analysis of Incidence of TCR Indicators."

[7] Please see Attachment G for a copy of Dr. Speight's presentation "Analytical and Sampling Methods."

The Committee discussed issues related to analytical and sampling methods on both days of their meeting. During their discussions, Committee members made the following points:

- The term "water matrix" refers to the constituents, including chemical and microbial, of the sample.
- Sample collectors are generally not microbiologists trained to do the analysis, although some are trained in how to take samples. Some states require collectors to be certified. Most small systems either contract a third party to collect their samples or collect samples themselves and learn through trial and error.

One member suggested that with the increased sophistication in testing methods, such as methods that test for TC and *E. coli* simultaneously, the significance of TC testing might be diminished. A member of the TWG noted that TC can be an indicator of a problem, such as a pathway into the system that has yet to evolve to the presence of *E. coli*. Another member questioned why systems were not testing for both TC and *E. coli* if they had the ability to do so.

Several Committee members expressed concern over the variability in testing methods (e.g., approval, sensitivity, specificity), and the variation in time between sample collection, determination of results, and action taken. One member stated that the current TCR does not have a time requirement for labs to report results. One TWG member added that the rule does require systems to inform the state within 24 hours of an *E. coli* positive sample, and that the state then determines if immediate follow-up action is necessary.

A Committee member raised a concern about the potential for conflict of interest if TWG members, some of whom work for businesses involved with testing, also participate in evaluating testing methods. Ms. Bingham requested guidance from EPA about who should participate in the evaluation.

During the discussion, Committee members raised the following questions for consideration in the discussion of options:

- Should the Committee consider recommending revisions to the National Primary Drinking Water Regulations regarding the list of approved methods?
- Should the Committee recommend that EPA consider developing protocols and procedures that set criteria for analytical methods?
- Should the revised rule include a requirement to test for TC and *E. coli* simultaneously?

The Committee also requested the following information from the technical work group:

- What is the timeline sequence for indicator sampling and results? Does the choice of methods affect the timing? Is there a way to shorten the time between sampling and test results?
- How are the results impacted by the specificity and sensitivity of analytical methods?

D. Monitoring and Reporting Violations

Mr. Owen gave a presentation on "Monitoring and Reporting Violations."[8] The presentation addressed the following questions from the TCRDSAC: How well are systems complying with the TCR? What types of systems are having problems with compliance? What are the differences in violation rates between states? What else can we learn from the M/R compliance information?

In the discussion, one Committee member suggested looking at the data geographically or seasonally to see if temperature or weather variations correlated with monitoring and reporting violations.

E. Implementation Actions Being Taken in Response to a TC+

Darrell Osterhoudt, Association of State Drinking Water Administrators, gave a presentation on "Implementation Actions Being Taken in Response to a TC+."[9] The presentation gave an overview of the actions taken by states and utilities in response to TC positive samples, fecal coliform/*E. coli* positive samples, and MCL violations. In the discussion afterward, the following points were made:

- States generally expect labs to notify them of an EC positive; some states require it.
- The actions states take in response to TC positives are often decided on a case-by-case basis. Most of the tools referenced in the presentation are used in varying degrees and frequency.
- Some states are prohibited from requiring actions more stringent than what is required in federal regulations.

IV. Options Discussion

Over the course of the two-day meeting, the TCRDSAC discussed options for revising the TCR. These discussions fell into four main categories: regulatory construct and indicators; possible revisions to TCR monitoring requirements; potential follow up actions; and other rule elements. The following sections summarize the Committee's discussion in each of these categories.

Throughout their deliberations, members reiterated the overarching goal of keeping drinking water as safe as possible. One member raised the question of how to prove that a revised rule is protective of public health when there is no baseline from which to start. Another member stated that each option package under consideration will have to be evaluated as a whole and compared to the current rule in order to meet the Safe Drinking

[8] Please see Attachment H for a copy of Mr. Owen's presentation "Monitoring and Reporting Violations."

[9] Please see Attachment I for a copy of Mr. Osterhoudt's presentation "Implementation Actions Being Taken in Response to a TC+."

Water Act requirement that revisions "shall maintain or provide for greater protection." This member noted that this evaluation will involve some subjective judgments.

A. Regulatory Construct and Indicators

The Committee members discussed options for revising the regulatory construct of the TCR. To start the discussion, one member suggested an overarching framework in which systems were placed in tiered "bins" based on "good" actions the systems undertake, a current sanitary survey indicating a well-maintained system, and a good compliance history. In this model, systems can move into a higher level, with less monitoring, if they proactively take actions determined to be protective of public health. Conversely, systems with more violations and fewer proactive actions move to lower level "bins" with more frequent monitoring.

In discussing this possible framework for a revised rule, the Committee raised the following points and questions:

- It will cost money for systems to take the type of actions necessary to move to higher "bin" levels (with less monitoring); some systems without resources may never be able to move up a level. The State Revolving Funds may be a good source of funding.
- It is important to keep the structure simple enough (for example, not too many levels of monitoring frequency) that the states are not spending so much time tracking monitoring data that they cannot do sanitary surveys. There will need to be some system of boxes that states can check off.
- How will states decide if a system is in compliance?
- Will the implementation be too complex if systems are moving in and out of bins all the time?

The Committee also discussed other variations on the tiered "bin" structure, including:

- Have all systems start at Bin 1, with lowest level of monitoring, and move down as problems are identified.
- Have all systems start out a high level of monitoring that can be decreased as good practices are proactively adopted.
- Set up bins based on sanitary survey ratings and results. This would put pressure on states to fund them. Consider building in incentives for systems to contract with third parties to perform sanitary surveys more frequently than the current 3-5 year requirement.

One member proposed basing the bins on something more concrete than behavior, such as system type. Related to this, another member put out for discussion the idea of organizing systems as they were in the SDWA framework/TCR Objectives presentation. Others noted some of the challenges with this concept, including statutory definitions of systems, which are based on customers served (CWS, NCWS, etc.), and the structures already in place for tracking data. One member suggested the possibility of combining system types with system characteristics. For example, for TNCWS, start with surface water systems, then further define them by customers served, then by characteristics such as wells, street plumbing, etc.

The Committee then went on to discuss other possible frameworks for a rule. One Committee member noted that one of the construct options is to keep the rule as it is.

Another suggested keeping the current rule construct (within or separate from the "bin" structures proposed above) with some modifications:

- Keep the acute maximum containment level (MCL) violation for *E. coli*.
- Change the monthly MCL (and the public notification associated with it) to an action level with required follow-up action and report to the state.
- Keep the trigger for action 5% positives for large systems; change the trigger to 2 positives for small systems.
- Include a Tier 2 violation if action not taken and no report to the state.
- Increase the monitoring schedule to monthly, with built in opportunities for reduction if preventative strategies are employed. Possibly reduce monitoring frequency for seasonal systems.

Members noted that, from a state perspective, the additional burden in this framework would be acceptable because of the additional protection to public health that would result from the requirement that systems go out and look for issues (with the expectation that they would then fix them). Removing the monthly MCL violation also would leave systems with more time to address issues.

The Committee also discussed general issues related to regulatory construct and indicator options under consideration. Members raised a concern that any framework requiring action puts the onus back on the systems, and it is possible that they will not do anything but fill out a form and send it in. One member pointed out that if a system reaches an action level, there is a difference between a rule that says you have to go out and look at things, and one that says you have to correct a problem, and within a specific timeframe.

Related to this concern, one member urged that the monthly violation provision remain unchanged for NCWS. Taking away the regulatory burden of responding to a TC positive could extend the time before some action is taken and prolong the exposure period to a contaminant. This member noted that for NCWS, providing water is an ancillary service and it is likely they would not handle the action level as they should. Another member suggested the same could be true for some CWS.

One member pointed to the need for "grandparenting" provisions to ease the transition to a new rule.

B. Possible Revisions to TCR Monitoring Requirements

The Committee engaged in a conversation about their ideas for modifications to the TCR for the design of monitoring requirements. Over the course of their deliberations on monitoring requirements, the Committee members discussed options and issues related to repeat monitoring, routine monitoring, and monitoring and reporting violations.

1. Repeat Monitoring

Committee members began by discussing several possible options for revising the repeat monitoring requirements in TCR, including the following:

- Rather than positive repeat sampling results leading to a violation, use the results to focus resources on responding to water quality and system integrity issues.
- Give operators more leeway to determine repeat sampling locations rather than limiting locations to within 5 service connections up and downstream.
    - Locations that some systems might currently select as an ideal site cannot currently be used because of this requirement.
    - Operators could consider variables such as residence time or water flow patterns in selecting sites.
    - Allow for operators to respond to unique circumstances.
    - Keep in mind that some entire residential areas are eliminated as potential sampling sites because repeat samples cannot be collected within the required 24-hour timeframe since the residents are not home.
- Keep the current structure for repeat sampling and allow systems to propose and justify other options if upstream/downstream does not work.
- Consider requiring that all systems have dedicated sampling taps.
- Consider requiring upstream/downstream repeat sampling only for *E. coli* positives.
- Have a default of at least 3 repeat samples, the original site, one upstream, and one downstream. Address single site systems with an exception.
- Require one repeat sample for systems that do not have upstream/downstream locations (e.g., hand pump wells).
- Keep in mind that states use repeat samples to invalidate routine samples.

During the discussion of options, Committee members raised several points to keep in mind as options are considered. One member noted that the repeat sampling strategy will be different depending on the rule construct (bins, triggers, etc.).

Some members spoke to the value of developing repeat sampling plans, so that systems know what actions to take and where to sample. One member noted that for very small systems, sampling plans allow for continuity between operators and create important opportunities for dialogue between the systems and the state.

One member pointed out that the current rule gives single site systems the option to either collect repeat samples on four consecutive days, or take one larger, 400 ml sample. Other members noted the resource issues related with the first option, and difficulty with the latter option in how the laboratory records the sample.

One member cautioned that decreasing the number of repeat samples, particularly for systems that take a small number of samples to begin with, could decrease the likelihood of finding contamination events and lessen protection to public health. In response, another member suggested that the Committee could balance the reduction in repeat sampling with a requirement to take more routine samples.

2. Routine Monitoring

The Committee then discussed routine monitoring and identified the following options for further consideration:

- Consider linking a reduction in the number of required samples to the results of sanitary surveys, the types of barriers in place, etc.
- Instead of requiring monthly or quarterly monitoring, link frequency to a judgment about consistency in water quality and system integrity over a period of time.
- Consider ways to integrate options to encourage systems to take proactive actions that protect public health. For example, if a system maintains a disinfectant residual, it would only have to monitor for *E. coli*, not TC.
- Be cautious of requiring a disinfectant residual for ground water systems, because the residual could mask problems in the system, and, for NCWS, there may not be well- trained operators to apply the disinfectant.
- Consider requiring disinfectant treatment after contamination occurs.
- In addition to other samples, require samples to be taken at all the entry points to the system so that TC is more indicative of treatment efficacy.
- Change how seasonal systems are monitored to take into account their unique timetables.

During the discussion of routine monitoring options, the Committee made several additional points for consideration, including:

- There is not a link between monitoring and public health protection because monitoring is too infrequent. The goal of monitoring is to ensure all the barriers are in place (i.e., whether aquifer/well, treatment, pipeline, storage, etc. are functioning), and to discover, after the fact, if there is some deficiency in the system. To make the link with public health, there would have to be continuous monitoring, or the maintenance of a continuous barrier, like disinfection residual.
- In Utah, the state has an "improvement priority" system that rates problems that need to be addressed. Systems get a warning letter first, and if no improvement, letters then go to the system, public health agencies and federal agencies.

3. Monitoring and Reporting (MR) Violations

The Committee then moved on to a discussion about monitoring and reporting. During this discussion, members raised the following options for further deliberation:

- Include strategies aimed at reducing the number of monitoring and reporting violations among small systems.
- Have an MR violation only if a system is a month late in reporting, or is repeatedly not responding. Consider different requirements if there is an *E. coli* positive.
- Consider ways to improve the communications systems between states and systems.
- Rather than have systems report positive samples to the state, have the lab report directly to the state.
- Tie operator licenses to track record on monitoring and reporting.
- For public water systems (PWS) that provide water as an ancillary service (e.g., restaurants), work with licensing agencies to tie licenses to compliance history.

- Consider civil and criminal liability for operators with a pattern of reporting violations as is done with the wastewater program.
- Consider requiring states to give TNCWS a rating that the systems would have to post in a window and update regularly.
- Consider how best to motivate small NCWS to fulfill their responsibility to protect public health.

In response to suggestions about operator training/requirements, one member noted that 70-80% of systems are not required to have operators, and stated that it is very challenging to communicate to these systems their significant responsibility to protect public health on a day-to-day basis.

Given the high rate of monitoring and reporting violations, one Committee member noted that revising monitoring requirements would not necessarily result in more monitoring. He reminded the Committee that the more time states spend tracking monitoring and reporting, the less time they have to spend on other activities such as sanitary surveys and operator certification.

One Committee member noted that there are flaws in electronic lab reporting: contract labs are not motivated to report, there is no opportunity for the lab to validate or identify errors, and systems are left scrambling to document them. A TWG member reminded the group that EPA does not have the authority to regulate laboratories.

During the monitoring discussion, Committee members raised the following questions that need further discussion or research:

- What is the right number of minimum samples?
- What are the states with the best compliance history doing?
- With electronic reporting, what document is produced that states can use to verify a positive result?
- Is there an opportunity for meaningful monitoring that is protective of public health?

C. Potential Follow-up Actions

The Committee then engaged in a discussion about their initial ideas for modifications to TCR that might be associated with TC becoming an action level rather than an MCL. During this discussion, the Committee members identified the following follow-up action options for consideration:

- Allow systems to make the initial decision about corrective action, using a standardized list of what to investigate, with approval by the state.
- Allow for the possibility that no action will be necessary if a system does an investigation following a positive and does not identify a problem. Trigger a state investigation if the same situation continued to occur.
- Give the states flexibility in the tools they can use for follow-up actions.
- Require investigation and correction (if problem is identified) following two TC positives.
- Following an *E. coli* positive, instigate a full investigation of the system.

- Consider ways to allow for faster follow-action for NCWS. For example, if the monitoring frequency is increased, the 2 positives trigger will occur more quickly. Or the first TC positive could trigger additional monitoring.
- Include in the requirements when an evaluation must take place, what should be evaluated, who should do the evaluation (for example, first evaluation by certified operator, second, if needed, by state), when action must be taken, and when the state becomes involved.
- Incorporate elements of sanitary surveys into guidance for corrective actions.

Over the course of their discussion about follow-up actions, Committee members made the following additional points for consideration in their deliberations:

- Just inspecting the system after a TC positive is a good action.
- Minnesota, for NCWS, treats a TC positive like an *E. coli* positive because it is easier for the system to understand the significance of the situation so that immediate action can be taken.
- If the Committee decides to eliminate the monthly MCL violation, the provision would have to be applicable to all systems; it would not be acceptable to have an MCL for NCWS and not for CWS.
- In Minnesota, the monitoring costs are generally paid by the state.
- TNCWS, which have customers that may not be aware of water quality issues, need to be subjected to particular scrutiny and a fast timetable to better manage risk.
- Minnesota requires TNCWS to post a notice after a TC positive, and until the repeat samples are negative, about the need to find an alternative water source. However, primacy agencies that are not public health departments do not have the same authority to do so.
- Different states have different statewide and local authorities to assist primacy agencies with investigations.

The Committee requested the following additional information:

- Provide more details on the Minnesota model for NCWSs.

D. Other Rule Elements

In the final portion of their discussion on initial option ideas, the Committee focused on three additional programmatic elements of the rule: sanitary surveys; cross-connection control; and public notification.

1. Sanitary Surveys

Over the course of their discussion, Committee members raised the following questions and considerations related to sanitary survey options in a revised rule:

- Define parts of the survey that cannot be changed without state approval (e.g., method of disinfection); add penalties for making these changes without approval.
- Consider adding a component requiring documentation of customer complaints and how they were addressed.

- Consider requiring additional sanitary surveys if systems have multiple months of violations.
- Provide incentives for systems to do more frequent sanitary surveys, possibly using third party entities.

During their discussion of sanitary survey options, members raised several additional points and questions to take into consideration during their deliberations:

- How will an increased emphasis on sanitary surveys in TCR enhance public health protection?
- Sanitary surveys only capture how the system is performing at a point in time, and are too infrequent to capture some changes to the system.
- Sanitary surveys are not static; each one builds on the last.
- The real value of sanitary surveys is the extent to which they are incorporated into the daily workings of the system.
- Sanitary surveys are extremely useful tools for small systems. Because of resource limitations, these systems depend on the surveys to provide information about system deficiencies and provide documentation for decision-makers about necessary improvements and changes.
- It would be helpful to consolidate various rules so that the components of sanitary survey related to the consequences for significant deficiencies and the timetable for correcting them are the same. The legal authority of the state should be the same regardless of source water type.
- There is a potential for a breach of security if descriptions of facilities are included in sanitary survey reports.

2. Cross Connection Control

The Committee discussed whether and how cross connection control should be included in revisions to TCR. One member expressed the view that cross connection issues were part of the Committee's second charge, information collection and research needs, not its first charge on revisions to TCR. Another member agreed stating that he preferred that data collected on cross connections become part of EPA guidance not regulations. He also emphasized that he did not want federal regulations involved in premise plumbing.

Other Committee members agreed that premise plumbing was not in the Committee's purview, but expressed the view that cross connections control should be considered when revising TCR in an attempt to isolate public water systems from these types of hazards. These members pointed to the rule's objective on system integrity and to presentations to the Committee that identified cross connections as a significant problem. During the discussion, members offered the following options for addressing cross connection control in the rule:

- Provide incentives, such as reduced monitoring, for systems to institute cross connection control programs.
- Strengthen the cross connection control component of sanitary surveys. For example, a significant deficiency could be failure to have a cross connection control program or a mechanism for preventing backflow.

One member noted that Utah requires all public water systems to have a cross connection control program that includes 5 elements: local authority, a public awareness program, trained staff, ongoing evaluation, and recordkeeping. The complexity of the program increases with the complexity of the system. This member also pointed out that plumbing codes and model codes only address the initial installation of interior plumbing and not changes made over time. Another member noted that many states look at cross connections during sanitary surveys and have found ways to work with other local authorities to address deficiencies.

During the discussion, the Committee made several requests for additional information on cross connections related to its deliberations on revisions to TCR, including:

- What types of programs are in place; what are the components of these programs;
- Information on legal authorities (recitation from federal statute, plumbing codes, local codes);
- Metrics for evaluating cross connection control programs;
- How cross connection control programs can operate within the construct of TCR (what do we know about the linkage between TC/*E. coli* and cross connections;
- Information about confirmed outbreaks related to cross-connections; and
- What is currently in manuals and guidance summaries about cross connection control programs (AWWA manual, EPA guidance).

3. Public Notification

The Committee also discussed the public notification component of TCR. One member reminded the Committee that the law requires public notification of an MCL or treatment technique violation, and regulation defines what Tier 1, 2, and 3 public notification entails. If the Committee were to decide on an action level for TC, exceeding the action level would not trigger public notification (because there is no violation), but failure to take action could (probably Tier 2). Another member stated that the Consumer Confidence Report, the annual report to customers, would have to be adjusted to remove the reference to MCL, but would still have the required reporting of the highest number of TC positives in one month.

During the discussion, Committee members raised the following questions related to public notification:

- How would the public be informed of violations and compliance in systems that are more marginal?
- What is the best way to communicate with the public about system noncompliance issues: What kind of message resonates best if there is an issue the public needs to be aware of and become involved with? What motivates people to take action to protect their health?

V. Public Comment

B. Sachau of Florham Park, NJ offered written public comment to the Committee.[10] No other members of the public offered comment at the meeting.

VI. Next Steps and Action Items

Ms. Bingham suggested to the Committee that they form drafting work groups to put all the ideas for options into packages for further deliberation. The groups would be asked to complete their work by the end of January, so that they would have sufficient time to review the packages before the February TCRDSAC meeting. She encouraged the groups to draft language on behalf of the whole Committee, as opposed to representing their own individual positions.

Mr. Owen then described, in very broad outlines, four possible option frameworks for drafting groups to develop further:

1. The status quo – the current TCR framework.
2. "Traditional Trigger" – Baseline monitoring that might trigger some actions; monitoring noncompliance could trigger public notification; public notification for acute violations and failure to do actions; MCL for *E. coli.* (This framework is more static, without the "bins" that systems can move in an out of based on behaviors.)
3. "Expected Behavior (with Incentives)" – Baseline monitoring and practices; reduced monitoring under certain circumstances; noncompliance could trigger public notification; public notification for acute violations; MCL for *E. coli.*
4. "Expected Behavior (Punitive)" – Baseline monitoring and practices; increased monitoring or additional actions under certain circumstances; monitoring noncompliance could trigger public notification; public notification for acute violations; MCL for *E. coli.*

One member emphasized that drafting groups need to develop very specific standards - for monitoring, actions, public notification – so that it is clear what it means to be in compliance.

The Committee agreed that each group could determine how to include components such as sanitary surveys, what should be guidance as opposed to regulation, and how to address different types of systems. One member suggested that more than one group work on each framework to increase the variety of approaches for discussion. Ms. Bingham also encouraged the Committee members to develop additional frameworks.

The following TCRDSAC members and alternates volunteered to form drafting groups:

- Group 2, Traditional Trigger Framework: Carrie Lewis, Tom Crawford, Cynthia Dougherty, Mae Wu, Darrell Osterhoudt, and Erica Brown.
- Group 3, Expected Behavior (with Incentives) Framework:

[10] A copy of B. Sachau's public comment is available from the Designated Federal Officer.

    - 3 a: Patti Fauver, David Baird, and Pam Barr
    - 3 b: David Visintainer, Mark LeChevallier, and Bob Vincent
- Group 4, Expected Behavior (Punitive):
    - 4 a: Harvey Minnigh, Christine Maloni Hoover, and Gary Lynch
    - 4 b: Jerry Smith, John Neuberger, and Lynn Thorp

One member suggested that the drafting groups be given time on the January TCRDSAC meeting agenda to meet.

The Committee then discussed additional information it would like to receive from the technical work group. Ms. Bingham recommended that the TWG provide as much of the information as possible in handout format. She noted that most of the agenda for the January TCRDSAC meeting will be devoted to a full discussion of information collection and research needs, related to the Committee's second charge. If the options drafting groups also meet during the January meeting, there will be limited time for additional presentations by the TWG.

In addition to the information requested earlier on analytical methods and cross connections, the Committee requested the following information from TWG:

- Information on operator certification requirements, current level of training, etc.
- Information on Minnesota's approach to NCWS

The following are items from the meeting:

TASK	WHO	WHEN
Provide summary of 12/5-6 meeting to EPA	RESOLVE	December 21
Send draft December summary to TCRDSAC	RESOLVE	Week of December 31
Contact public health speakers from October meeting for comments on meeting summary	RESOLVE	ASAP
Send revised October meeting summary to TCRDSAC for approval if public health speakers provide additional comments	RESOLVE	Week of December 17
Approve October meeting summary, if necessary, via email	TCRDSAC	Week of December 24
Send task group assignments, deadlines, and previous agreements in principle to TCRDSAC	RESOLVE	December 14
Provide guidance on which TWG members should be part of the team analyzing indicator testing methodology to ensure transparency	EPA	ASAP
Draft language for the assigned option framework	TCRDSAC task groups	By January 31
Respond to TCRDSAC requests for information	TWG	Ongoing

The next TWG meeting will be on January 15, 2008 in Washington, D.C. The next TCRDSAC meeting will be on January 16-17, 2008 in Washington, D.C.

NOTE: This document was prepared by the facilitators for consideration by the Total Coliform Rule Distribution System Advisory Committee and does not constitute a product of the Committee. The Total Coliform Rule Distribution System Advisory Committee is a federal advisory committee chartered by Congress, operating under the Federal Advisory Committee Act (FACA; 5 U.S.C., App.2). The Committee provides advice to the Administrator of the U.S. Environmental Protection Agency on revisions to the Total Coliform Rule (TCR), and on what information about distribution systems is needed to better understand the public health impact from the degradation of drinking water quality in distribution systems. The findings and recommendations of the Committee do not represent the view of the Agency, and this document does not represent information approved or disseminated by EPA.

Attachments

Attachment A – TCRDSAC roster*
Attachment B – Meeting agenda*
Attachment C – List of meeting attendees
Attachment D – September TCRDSAC Meeting Summary*
Attachment E – Doug Owen's presentation "Total Coliform Rule Within a Safe Drinking Water Context"*
Attachment F – Vanessa Speight's presentation "Analysis of Incidence of TCR Indicators"*
Attachment G – Vanessa Speight's presentation "Analytical and Sampling Methods"*
Attachment H – Doug Owen's presentation "Monitoring and Reporting Violations"*
Attachment I – Darrell Osterhoudt's presentation "Implementation Actions Being Taken in Response to a TC+"*

* The meeting presentations and other documents may be found online at http://www.epa.gov/safewater/disinfection/tcr/regulation_revisions_tcrdsac.html.

U.S. Environmental Protection Agency
Total Coliform Rule/ Distribution System
Advisory Committee Meeting
December 5-6, 2007

Meeting Attendees

Ali Arvanaghi, US EPA
Sarah Bahrman, US EPA
Zeno Bain, US EPA
David Baird, National Rural Water Association*
Pamela Barr, US EPA*
Jeremy Bauer, US EPA
Carolyn Berndt, National League of Cities
Jennifer Best, US EPA
Gail Bingham, RESOLVE
Eric Bissonette, US EPA
Manja Blazer, IDEXX
Ron Braun, IntelliTech Systems
Erica Brown, Association of Metropolitan Water Agencies*
Gary Burlingame, Philadelphia Water Department
Joyce Chandler, US EPA
Jimmy Chen, US EPA
James Cherry, City of Virginia Beach Public Utilities
Cesar Cordero, US EPA
Tom Crawford, Native American Water Association*
Gil Dichter, IDEXX
Cynthia Dougherty, US EPA*
Patti Fauver, Environmental Council of States*
Peter Ford, US EPA
Jonathan Gledhill, Policy Navigation Group
Kathy Grant, RESOLVE
Tom Grubbs, US EPA
Yu-Ting Guilaran, US EPA
Trish Hall, US EPA
Curtis Haymore, The Cadmus Group, Inc.
Christine Maloni Hoover, National Association of State Utility Consumer Advocates*
Dawn Kristof Champney, Water and Wastewater Equipment Manufacturers Association
Dan Kroll, HACH Homeland Security Technlogies
Cynthia Lane, American Water Works Association
Mark LeChevallier, National Association of Water Companies*
Frank Letkiewicz, The Cadmus Group, Inc.
Audrey Levine, US EPA
Carrie Lewis, American Water Works Association*
Maria Lopez-Carbo, US EPA
Gary Lynch, National Association of Water Companies*
Mike Messner, US EPA

Harvey Minnigh, Rural Community Assistance Partnership*
Jini Mohanty, US EPA
Russell Navratil, County of Henrico, VA
John Neuberger, Council of State and Territorial Epidemiologists*
Eva Nieminski, Environmental Council of States*
Darrell Osterhoudt, Association of State Drinking Water Administrators*
Doug Owen, Malcolm Pirnie
Angela Page, US EPA
Jim Purzycki, American Backflow Prevention
Graciela Ramirez-Toro, CECIA-IAUPR
Stig Regli, US EPA
J. Kevin Reilly, US EPA
Alan Roberson, American Water Works Association*
Mark Rodgers, US EPA
Ken Rosenfeld, National League of Cities*
Kenneth Rotert, US EPA
Sharon Roy, Centers for Disease Control and Prevention
Rick Sakaji, East Bay Municipal Utility District
Tom Schaeffer, Association of Metropolitan Water Agencies
John Scheltens, American Water Works Association
Charlotte Smith, Charlotte Smith & Associates
Jerry Smith, Association of State Drinking Water Administrators*
Tim Soward, IntelliTech Systems
Vanessa Speight, Malcolm Pirnie
David Spenard, National Association of State Utility Consumer Advocates*
Scott Summers, University of Colorado at Boulder
Lynn Thorp, Clear Water Action*
Bruce Tobey, National League of Cities*
Steve Via, American Water Works Association
Bob Vincent, National Environmental Health Association*
David Visintainer, Association of Metropolitan Water Agencies*
Paul Whittemore, National Rural Water Association*
Beate Wright, Loudoun County Sanitation Authority
Mae Wu, Natural Resources Defense Council
Yvonne Yuen, US EPA